

# LOW VOLTAGE AUDIO POWER AMPLIFIER

## GENERAL DESCRIPTION

The NJM2149 is an audio power amplifier designed for telephone applications.

No external coupling capacitors are required because of the differential outputs. The closed loop gain is adjusted by two external resistors, and a CD pin permit powering down with muting, the input signal.

The NJM2149 improves the tern noise reduction in switching Power Down mode and external high band noise reduction, compared with NJM2135.

It is suitable for portable telephone, wireless telephone, button telephone, and other speaker amplifier applications.

## PACKAGE OUTLINE



NJM2149D



NJM2149M



NJM2149V

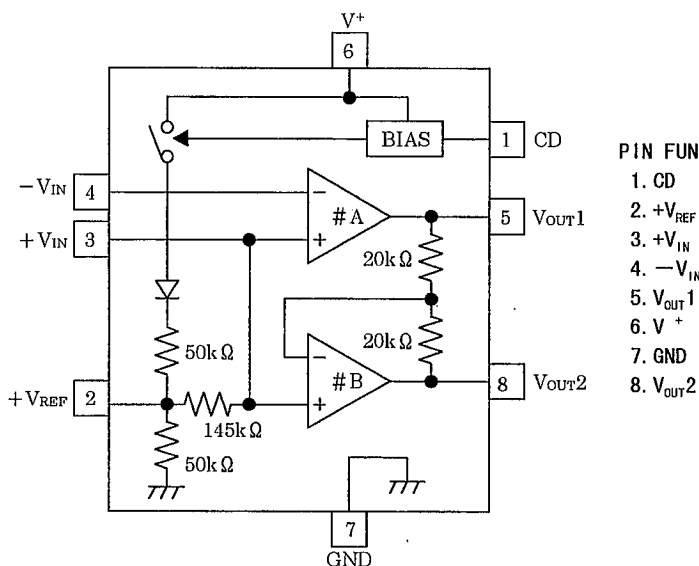


NJM2149R

## FEATURES

- Operating Voltage +2~+6V
- Operating Current 2.2mA typ., at V<sup>+</sup>=3V
- Supply Current in Power Down Mode 0.1μA typ
- Output Power Exceeds 250mW V<sup>+</sup>=6V, R<sub>L</sub>=32Ω
- Gain Range GVD=0-43dB, Voice Band
- Load Impedance R<sub>L</sub>=8-200Ω
- Bipolar Technology
- Package Outline DIP8, DMP8, SSOP8, VSP8

## PIN CONFIGURATION



### PIN FUNCTION

1. CD
2. +V<sub>REF</sub>
3. +V<sub>IN</sub>
4. -V<sub>IN</sub>
5. V<sub>OUT1</sub>
6. V<sup>+</sup>
7. GND
8. V<sub>OUT2</sub>

## ■ ABSOLUTE MAXIMUM RANGE

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	+7	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500 (DMP8) 500 (note1) (SSOP8) 360 (note1) (VSP8) 320	mW
Operating Temperature Range	Topr	-40~+85	°C
Storage Temperature Range	Tstg	-40~+125	°C

(note1) Mounted on PC Board

## ■ ELECTRICAL CHARACTERISTICS

(V<sup>+</sup>=6.0V, I<sub>pin</sub>=2V, Ta=25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V <sup>+</sup>		2.0	—	6.0	V
Operating Current	I <sub>CC</sub>	V <sup>+</sup> =3.0V, R <sub>L</sub> =∞, No Signal	—	2.2	3.5	mA
Operating Current at Power Down Mode	I <sub>CCD</sub>	V <sup>+</sup> =3.0V, R <sub>L</sub> =∞, I <sub>pin</sub> =0.8V, No Signal	—	0.1	1.0	μA
Open Loop Gain	A <sub>v1</sub>	Amp #A, f<100Hz	84	90	—	dB
Closed Loop Gain	A <sub>v2</sub>	Amp #B, f=1kHz, R <sub>L</sub> =32Ω	-0.35	0	+0.35	dB
Output Power	P <sub>O1</sub>	V <sup>+</sup> =3.0V, R <sub>L</sub> =16Ω, THD≤10% (note2)	55	—	—	mW
	P <sub>O2</sub>	V <sup>+</sup> =6.0V, R <sub>L</sub> =32Ω, THD≤10% (note2)	250	—	—	mW
Total Harmonic Distortion	THD1	V <sup>+</sup> =6V, R <sub>L</sub> =32Ω, P <sub>O</sub> =125mW, f=1kHz, G <sub>VD</sub> =34dB	—	0.5	1.0	%
	THD2	V <sup>+</sup> ≥3V, R <sub>L</sub> =8Ω, P <sub>O</sub> =20mW, f=1kHz, G <sub>VD</sub> =12dB	—	0.5	—	%
Power Supply Rejection Ratio (V <sup>+</sup> =3.0V-6.0V)	SVR1	C1=∞, C2=0.01μF, DC	50	—	—	dB
	SVR2	C1=0.1μF, C2=0, f=1kHz	—	12	—	dB
	SVR3	C1=1.0μF, C2=5.0μF, f=1kHz	—	47	—	dB
Mute Attenuation	MAT	f=1kHz-20kHz, I <sub>pin</sub> =0.8V	—	70	—	dB
Output Voltage (R <sub>f</sub> =75kΩ, DC)	V <sub>O1</sub>	V <sup>+</sup> =3.0V, R <sub>L</sub> =16Ω	1.00	1.15	1.25	V
	V <sub>O2</sub>	V <sup>+</sup> =6.0V	—	2.60	—	V
Output High Level	V <sub>OH</sub>	I <sub>OUT</sub> =-75mA, V <sup>+</sup> =2.0-6.0V	—	V <sup>+</sup> -1.1	—	V
Output Low Level	V <sub>OL</sub>	I <sub>OUT</sub> =75mA, V <sup>+</sup> =2.0-6.0V	—	0.21	—	V
Output DC Offset	ΔV <sub>O</sub>	R <sub>f</sub> =75kΩ, R <sub>L</sub> =32Ω, 5pin-8pin	-30	0	+30	mV
Input Bias Current	I <sub>B</sub>	4pin	—	0	-200	nA
Equivalent Resistance	R <sub>+IN</sub>	3pin	100	170	220	kΩ
	R <sub>REF</sub>	2pin	18	26	40	kΩ
CD Input Voltage H	V <sub>CDH</sub>	1pin	2.0	—	V <sup>+</sup>	V
CD Input Voltage L	V <sub>CDL</sub>	1pin	0.0	—	0.8	V
CD Input Resistance	R <sub>CD</sub>	V <sup>+</sup> =V <sub>CD</sub> =6.0V, 1pin	50	85	175	kΩ

(note2) NJM2149M, NJM2149V, NJM2149R: Mounted on PC Board

## ■ NOTE

1. The NJM2149 is active mode during the CD terminal is High level (>2.0V) and it is stand-by mode during the CD terminal is Low level (<0.8V).

---

# MEMO

**[CAUTION]**

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.